

NAREA Awards

Outstanding Master's Thesis Award

Comparing Two Modeling Approaches: An Example Using Fed Beef Supply

Camilo Sarmiento

**University of Massachusetts
Advisor: P. Geoffrey Allen**

For many agricultural supply responses the variables provided by economic theory are not enough for model building. There are biological constraints on production, delays in adjustment by producer, and uncertainty over prices. It is necessary to include dynamics in the model specification.

Previous econometric studies have specified beef supply using static models. Marsh (1994) recently remarked on the conflicting results in the sign of elasticity estimates in different models of beef supply. To reconcile previous findings, Marsh introduced dynamics using the

traditional econometric approach and was able to calculate long-run and short-run price elasticities.

In this study, I duplicate Marsh's results and compare them with the results from a time series econometric model (TSEM). The TSEM was more robust and explained the process of adjustment to equilibrium in the beef supply better than Marsh's traditional econometric model in terms of three criteria: within-sample performance, the economic significance of results, and the ex post forecasts of the models.

Master's Thesis Award of Merit

An Econometric Analysis of the U.S. Kiwifruit Industry

Hikaru Hanawa

**Cornell University
Advisor: Lois Schertz Willett**

Kiwifruit is a novel perennial vine crop introduced to U.S. consumers in 1962. In the United States, it is produced mainly in California, harvested in October, and marketed through May. The California Kiwifruit Commission, representing all California kiwifruit growers since 1980, advertises the fruit and has lobbied to extend the federal marketing order to include imports and to impose antidumping tariffs on New Zealand kiwifruit. Since the late 1980s, increased kiwifruit supply in both the northern and southern hemispheres has lowered the price significantly.

The objective of this study was to investigate how

U.S. kiwifruit growers could enhance their returns and to identify factors that affect industry growth. The determinants of supply, demand, and price received by growers were analyzed, with special interest focused on the impact of advertising and projections of the industry.

The U.S. kiwifruit industry model is conceptualized as a recursive system of two sectors. The production sector determines annual production through bearing acreage and yield relationships, incorporating the features of perennial crops. The marketing sector resolves monthly price through allocation and de-

mand relationships. Advertising is included as a demand factor.

In the supply sector of the empirical model, the change in net acreage, which reflects growers' expected profitability, determines bearing acreage. Crop size is defined as the product of bearing acreage and yield. The demand sector is specified separately for two periods because of data availability. From 1980/81 through 1985/86, price is determined by an annual price-dependent demand equation. For the period thereafter, a system of monthly equations determines the domestic shipment price simultaneously with domestic shipments and change in inventory. Exports are defined residually through an identity relationship.

Net acreage change and annual demand equations were estimated by ordinary least squares, using 14 and 15 observations respectively. The system of monthly equations was estimated by three-stage least squares, using 69 observations from 1986/87 through 1994/95 crop years, inclusive.

Static and dynamic simulations were performed on the model over the sample period. Model predictions for two crop years beyond the sample period were comparable to

recent available data and preserved the seasonal marketing pattern.

Results imply that the net acreage responds positively to revenue from kiwifruit production and negatively to land cost. The annual price is own-quantity inflexible (flexibility -0.521). Imports during the summer preceding the U.S. marketing season are substitutes for California kiwifruit, warranting industry efforts to prevent import flows. The effect of advertising is negligible, with the exception of 1980, when it enhanced the price by 4.57 dollars per shipment unit (tray equivalent).

Shipment decisions respond to current and expected prices in domestic and export markets and storage conditions. In contrast, storage conditions dominate other determinants of the change in inventory. The estimated marketing pattern indicates that the U.S. kiwifruit shipment is concentrated during January through March. The flexibility of monthly prices was estimated to be -0.594 . Domestic shipments in the previous month are complementary to current consumption, while imports are substitutes. Advertising expenditures in the monthly specification are insignificant as well.

Master's Thesis Award of Merit

Analysis of Short-Run Barge Rates for Southbound Grain on the Mississippi River System

Gregory Harnisch

**Pennsylvania State University
Advisor: James Dunn**

Although barges are an important mode of grain transportation, only one economic study has examined the determinants of barge freight rates in the short run. This paper identifies the determinants of short-run rates and their relative importance across waterways. Reduced-form regression models, including eight routes on the Mississippi River System and a pooled model combining all of these routes, are estimated with weekly data for the period 1988–95. Independent variables considered are grain exports, grain rail rates, coal barge rates, fuel prices, labor rates, and distance. The results show that grain exports, coal barge rates, and distance are statistically significant and positively influence rates. Yearly variations in grain barge rates are also detected. Statistical tests show that the effects of rate determinants for the eight routes are different and should be viewed as eight interrelated markets instead of a single market with one set of coefficients.

Price flexibilities are used to identify the relative importance of rate determinants for all routes and across routes. The magnitudes of these flexibilities suggest that grain barge rates are highly sensitive to coal barge rates, labor rates, and distance, particularly when the route contains locks. However, rates are also highly sensitive to exports when the quantity shipped is larger, implying that the supply curve for barge transportation has both elastic and inelastic regions. Grain barge rates on the Upper Mississippi River and the Illinois River are less sensitive than rates on other waterways to changes in coal barge rates. Distance is a relatively more important determinant of grain barge rates on the Upper Mississippi River, the Illinois River, and the Ohio River. These findings suggest that rates are relatively more sensitive to alternative uses of equipment and waterway characteristics than to the quantity shipped and operating costs.

Journal Article of the Year for 1996

Preserving Agricultural Land with Farmland Assessment: New Jersey as a Case Study

Peter J. Parks and Wilma Rose H. Quimio

Rutgers University

A conceptual model links agricultural profits, capital gains, interest rates, and property taxes to the sale of agricultural land by profit-maximizing owners. The model motivates an empirical analysis of New Jersey data from 1949–90. Results show that higher interest rates, property taxes, and speculative capital gains increase conversion of agricultural land and that land area

is generally inelastic with respect to changes in economic conditions. These results suggest that nonagricultural considerations may overpower the economic incentives provided by such policies as farmland assessment. Consequently, alternative policies (e.g., purchase of development rights and land use zoning) may be needed to sustain agriculture in rapidly urbanizing areas.

Honorary Life Member Award

Johannes Delphendahl

**Department of Resource Economics and Policy
University of Maine**

Dr. Johannes Delphendahl is recognized as an Honorary Life Member of NAREA based on his early and continued contributions to land and resource economics in the Northeast, his outstanding service to NAREA and its predecessor organizations over more than forty years, and his distinguished career at the University of Maine.

Originally from Germany, Johannes Delphendahl joined the University of Massachusetts faculty as an instructor in 1954. After receiving his Ph.D. degree at Michigan State University and serving on the faculty at New Mexico State University, he joined the University of Maine faculty in 1962. He served on the Maine faculty as assistant, associate, and full professor until 1996, when he became emeritus professor.

Dr. Delphendahl made early and numerous contributions to resource, recreational, and land economics in the Northeast, long before resource economics became a popular field of inquiry. He was the first resource economist to join the University of Maine faculty and was originally involved in land economics, land use, and global food issues. He forged a relationship with the University of Southern Maine Law School to study land use regulation in the state, an effort that led to more comprehensive zoning ordinances in Maine towns. He branched out into work in recreational economics, including a large outdoor recreation study in Maine that laid the

groundwork for Maine's first comprehensive outdoor recreation plan. Later, he directed a major study of water quality and development issues on the Penobscot River, which was instrumental in subsequent efforts to improve river quality, leading to the return of salmon to the river.

Dr. Delphendahl's involvement with NAREA and its predecessor organizations has spanned more than four decades. He joined the Green Pasture Committee, a predecessor organization of the New England Agricultural Economics Association, while at the University of Massachusetts in 1954. Over the years, he has regularly participated in the association's annual meetings and has made sustained contributions to the association, including service on numerous committees and chairmanship of several. His service to the association was acknowledged when he was elected president-elect in 1976, serving as president the following year.

In his department, Dr. Delphendahl played an important role in providing encouragement and support and serving as a mentor to younger faculty. As department chair, he encouraged the scholarly development and professional activities of new faculty, including participation in the affairs of this association.

Later in his career, he became heavily involved in undergraduate teaching and was especially successful in teaching the principles of economics to large numbers of

undergraduates. His service as department chair extended from 1974 to 1981, and 1984.

Johannes Delphendahl's career has been characterized by early and significant contributions to his profession and to environmental and land use planning in the State

of Maine, sustained service to NAREA and its predecessor associations, and outstanding contributions to his department. Based on these and many other contributions, we recognize Dr. Delphendahl as an Honorary Life Member of NAREA.

Distinguished Member Award

Julie A. Caswell

Department of Resource Economics University of Massachusetts

Dr. Julie A. Caswell is recognized as a Distinguished Member of NAREA for her outstanding record of service to the association and other regional research and extension efforts. Dr. Caswell has been a member of the University of Massachusetts faculty since 1984, where she has developed a distinguished record of scholarship in the areas of food marketing and policy. She has also been a member of NAREA since 1984 and has served the association in numerous capacities—as a member of the Finance Committee, as a Selected Papers reviewer, and as chair of the Selected Papers and Symposia Committee in 1987–88. She gave the invited address on food safety and policy at the annual meetings in 1990 in Nova Scotia. Her service to the association was acknowledged by her having been elected president-elect of NAREA in 1993, and she served as president-elect, president, and past president from 1993 to 1996.

In addition to her record of service to NAREA, Dr. Caswell has devoted considerable efforts to regional research and extension programs in other capacities. She served as secretary, vice-chair, and chair of the Northeast Extension Marketing Committee between 1986 and 1989. Since 1989, she has chaired Northeast Regional Research Project No. 165, "Private Strategies, Public Policies, and Food System Performance." This important and successful regional research project includes ninety researchers from twenty-nine universities, eight units of the USDA, the Food and Drug Administration, and other cooperating institutions.

In acknowledgment and recognition of her distinguished service to NAREA and other regional research and extension efforts, we recognize Dr. Caswell's contributions through awarding her the NAREA Distinguished Member Award.